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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/311,070	05/13/99	HIRAKATA	Y 0756-1971

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EXAMINER

VU, Q

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/25/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.		Applicant(s)	
	09/311,070		HIRAKATA ET AL.	
	Examiner		Art Unit	
	Quynh-Nhu H. Vu		2871	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☒ received.
2. ☐ received in Application No. (Series Code / Serial Number) ____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 16) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 20) <input type="checkbox"/> Other: |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the switching element is connected to the capacitance" (claim 5) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

1. The disclosure is objected to because of the following informalities: the same reference number refers to two different elements, source electrode 812 (page 41, third paragraph), and multi-layer film 812 (page 41, third paragraph).

Appropriate correction is required.

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification does not disclose the limitations "...reflection area of said reflection layer is greater than an electrode area of said pixel electrode", as recited in claim 20, and "switching element is connected to a capacitance" as recited in claim 5.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not disclose a LCD device wherein the switching element is connected to a capacitance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 12-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Masaya et al. [JP 07-230101].

Regarding claims 1-4, 12, 14, 17 and 21, Masaya et al. disclose (Fig. 11) a liquid crystal display device comprising a switching element formed on a substrate; a pixel electrode (410) formed of a transparent conductive film (ITO) arranged in a matrix manner and being connected to said switching element; and a reflection layer formed of a dielectric multilayer film (409) being provided under said pixel electrode; a reflection layer (408 made of Al material) below said dielectric film.

Regarding claims 8-9, 22 and 23 the method of forming a liquid crystal display device is inherently the associated with the structure of the device of Fig. 11. It is noted that dielectric multilayer film is formed by vacuum deposit method. (section [0141]).

Regarding claim 15, Masaya et al. disclose that the pixel electrode is made of ITO, and the dielectric film can be made of titanium oxide or oxidation titanium.

Regarding claims 16 and 18-19, Masaya et al. disclose (Figs. 11 and 12) that the pixel electrode (410), dielectric film (409), and said reflection layer (407) constitute a capacitance (405A).

Regarding claim 20, Masaya et al. disclose (Fig. 11) a reflection area of said reflection layer (409) is greater than an electrode area of said pixel electrode (410). As apparent from Fig. 11, the pixel electrode covers a part of reflection layer.

Claims 1-4 and 12 -15 are alternatively rejected under 35 U.S.C. 102(b) as being anticipated by Hilton et al. [PN 4,185,894].

Hilton et al. disclose (Figs. 1-2) a liquid crystal display device comprising a switching element formed on a substrate; a pixel electrode (36) formed of a transparent conductive film as the light passing through the layers (36e, 36g, 36f); a dielectric reflector (68) is arranged in contact with said pixel electrode.

Claims 12 and 13 are alternatively rejected under 35 U.S.C. 102(b) as being anticipated by Matic [PN 5,650,835].

Matic discloses (Figs. 3-4) a liquid crystal display device comprising a first transparent electrode (28) formed on one substrate; a second transparent electrode (4) formed on another substrate wherein said first and second transparent electrodes are arranged in a stripe manner; and a reflection layer is formed of a dielectric multilayer film (34) below said second transparent electrode.

Claims 12 and 13 are alternatively rejected under 35 U.S.C. 102(b) as being anticipated by Takahara et al. [PN 6,049,364].

Takahara et al. disclose (Fig. 46) a liquid crystal display device comprising a first transparent electrode (21) formed on one substrate; a second transparent electrode (13) formed on another substrate wherein said first and second transparent electrodes are being arranged in a stripe manner; and a reflection layer is formed of a dielectric multilayer film (16 made of Cr material, Col. 49 lines 38-40) below said second transparent electrode.

Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al. [PN 6,108,056].

Nakajima et al. disclose in Fig. 8 a the method of manufacturing comprising the steps of: forming a switching element on a substrate (101); forming an interlayer insulating film (114) over said switching element; forming a reflection layer (116) made of a metal material on said interlayer insulating film; forming a dielectric film (117) on said reflection layer; and forming a pixel electrode (118) formed of a transparent conductive film on said dielectric film to form an auxiliary capacitance (119, 120) comprised of said pixel electrode, said dielectric film, and said reflection layer.

Allowable Subject Matter

Claims 10-11 are allowed because none of the prior art suggest or disclose a reflection layer formed of a dielectric multilayer film on common electrode and a pixel electrode formed on reflection layer.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsuyama et al. [PN 6,081, 315] disclose (Fig. 1) a dielectric multilayer film (10) arranged between a control electrode (14) and pixel electrode (13). However, dielectric multilayer film made of acrylic compound, benzocyclobutene or polysilazane compounds, or Silicon nitride material instead of metal.

Ohtani et al. [PN 6,099,070] disclose (Figs. 3A-3E) a pixel electrode made of ITO, interlayer insulating film (24).

Omae et al. [PN 5,963,283] disclose (Fig. 17) a pixel electrode (17), reflecting layer (129a, 129b, 129c) arranged below the pixel electrode.

Ukita et al. [PN 5,940,154] disclose (Fig. 5) a pixel electrode (6), transparent dielectric film (3) and reflection film (2) arranged below said dielectric film.

Kahn [PN 5,056,895] disclose (Fig. 1) a pixel electrode (70) made of Au instead of ITO, reflective layer dielectric mirror (75) over pixel electrode (70), dielectric layer (50), insulating layer (64, 66, 68) are below the pixel electrode.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quynh-Nhu H. Vu whose telephone number is 703-305-0850. The examiner can normally be reached on 7:30 a.m. - 5:00 p.m. (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Sikes, can be reached on (703) 308-4842. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7724.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QNV
10/12/00

A handwritten signature in black ink, appearing to read "William L. Sikes".

William L. Sikes
Supervisory Patent Examiner
Technology Center 2800